

## **SPECIFICATION**



### **TITLE OF INVENTION**

**SELF-CLOSING RING BINDER**

### **CROSS-REFERENCE TO RELATED APPLICATIONS**

Not Applicable

### **STATEMENT REGARDING FEDERALLY SPONSORED R & D**

Not Applicable

### **REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING APPENDIX**

Not Applicable

### **BACKGROUND OF THE INVENTION**

In the typical ring binder, the knob(s) is to be pushed to have space at each centers of rings in order to insert perforated papers and documents through the openings. And the knob(s) is to be pulled to close the rings after inserting the papers to secure filing. Representative examples of typical ring assemblies showing one or more these features are : U.S. Pat. No. 1,634,125; U.S. Pat No. 4,368,995; U.S. Pat. No. 6,270,279; and U.S. Pat. No. 6,511,244. An improved method has been studied for having easier open/close the ring openings, minimized actions to file and more secured stack of papers and documents. In order to accomplish these ideas, the self-closing bars located at the center of each ring posts, the retaining forces of metal springs and/or

magnetism are employed, which eliminate the push/pull knob(s) appeared in typical ring binders.

#### **BRIEF SUMMARY OF THE INVENTION**

[0001] The claimed invention of Self-Closing ring Binder refers to the ring binder for filing perforated papers, documents, etc., and has characteristics in the self-closing bars at the center of each ring posts of the binder. The mechanism is consisted of opening bars, ring posts, metal springs, magnetic, holding pins and base plate. The opening bars are attached to one leg of each ring posts and work as the bridges to the other leg of the corresponding ring posts.

[0002] At each ring posts, the opening bar closed between the legs of a ring post by the retaining force of spring and/or magnetism. The spring is located at the connection point between the opening bar and the leg of a ring post, which enables the bar closed automatically at the other leg of corresponding ring post which performs as the anchor for holding the opening bar. The magnetic are pasted at both adjoining sides of the opening bar and the contacting leg of ring post, which help the opening bar upheld in the ring. The holding pin is used to combine the opening bar, the metal spring and the one leg of ring post in a package and to fasten the parts in secure.

[0003] When perforated papers and documents push to insert through the rings, the opening bars are opened automatically and closed either automatically by spring's retaining force or manually by hand when only magnetic are employed. The retaining forces of metal springs and/or magnetism together with centered opening bars enable the paper filing process easier, simpler, and more secure than the typical ring binder.

[0004] To construct the claimed invention of Self-Closing Ring Binder, metal and/or suitable rigid plastic materials are used with carrying at least one ring, preferably three rings. The rings may have any suitable forms, which may be a ring proper, a rectangular ring, a D-like ring or the like. The binder is embodied on the cover by using suitable means, such as screws, bolts, nails, rivets, and glue.

[0005] The cover of binder may be made of a suitable rigid plastic material, such as polypropylene, polyethylene etc., or from a cardboard, or from a cardboard covered with a suitable plastic foil material, such as PVC, polypropylene, polyethylene etc.

[0006] The claimed invention eliminates the open/close knob(s) for having open space at the center of rings to file perforated papers and documents. Only one step of pushing the opening bars by the perforated papers is necessary to file and to secure documents in the binder.

### BRIEF DESCRIPTION OF THE VIEWS OF THE DRAWINGS

The claimed invention is illustrated with reference to the accompanying drawings, wherein:

FIGURE 1a shows a perspective views of Self-Closing Ring Binder with built in projection, wherein the binder is embodied on the central part of the cover;

FIGURE 1b shows a perspective views of Self-Closing Ring Binder with built in projection, wherein the binder is embodied on one lateral part of the cover;

FIGURE 2a shows cross section of a ring of the binding mechanism shown in FIGURE 1a;

FIGURE 2b shows cross section of a ring of the binding mechanism shown in FIGURE 1b;

FIGURE 2c shows top view of a ring shown on FIGURE 2a and 2b;

FIGURE 3a shows a perspective view of opening bar located at the center of ring shown in FIGURE 2a;

FIGURE 3b shows a perspective view of opening bar located at the center of ring shown in FIGURE 2b;

FIGURE 4 shows a perspective view of retaining spring placed at the connection point between opening bar and one leg of ring post;

FIGURE 5 shows a perspective view of holding pin to fasten opening bar, spring and a leg of ring post together.

FIGURE 6 shows a perspective view how the opening bar, retaining spring and holding pin constructed to ring post.

## DETAILED DESCRIPTION OF THE INVENTION

[0001] As shown in FIGURES 1a and 1b, ring binder mechanism 1 constructed in accordance with the descriptions of this invention comprises ring posts 2, opening bars 3 and base plate 4. While three ring posts are shown in the drawings, the number of ring is not essential to the invention, provided that at least one pair of ring is present.

[0002] The ring binder mechanism 1 is usually located within a cover 5 as shown on FIGURES 1a and 1b. The base plate 4 is affixed to the back of cover 5 by rivets 6 or glue. The base plate 4 and ring posts 2 are constructed of slightly resilient and strong material by molding as a whole or by welding ring posts 2 at the base plate 4.

[0003] The shape of ring post 2 may have any suitable forms, which may be a ring proper as shown on FIGURE 2a, a rectangular ring as shown on FIGURE 2b. One leg 11 of ring post 2 has hole 12, room 15 for retain spring 31, concave 16 to sit the leg 23 of opening bar 3 and legs 17 to hold the opening bar 3. The holes 12 and 21 are made at a suitable point, preferably the middle of the width of leg 11 and opening bar 3, to move the opening bar 3 smoothly and freely. The other leg 13 of ring post 2 is cut inner diagonally and flattened to stop the opening bar 3, on where a magnetic may be glued on. The ring posts 2 are constructed of slightly resilient and strong material and can be molded by metal or suitable plastic, or welded on the base plate 4 when only metal is used.

[0004] The opening bars 3 as shown on FIGURE 3a and 3b are used to make up the gap between the legs 11 and 13 of each ring post 2 and to be formed to travel the perforated papers smoothly. One side of the opening bar has hole 21 to secure holding pin 33 as shown on FIGURE 5, space 22 to custody retain spring 31 and legs 23 to be tied with one leg 11 of the ring post 2. The other side 24 of opening bar 3 is cut outer diagonally and flattened to be stopped by the leg 13 of the ring post 2, on where a magnetic may be glued on. The opening bars 3 are constructed of slightly resilient and strong materials and are molded by metal or suitable plastic, or folded by sheet metal.

[0005] The retaining spring 31 shown on FIGURE 4 is constructed by steel wire having sufficient force to hold back the opening bar 3 to the corresponding leg 13 of ring post 2. It has also feathering tension to accept the pushing force of a few perforated papers. The retaining spring 31 is coiled at the center to accept the holding pin 33 and placed at the middle 15 of one leg 11 of ring post 2 and space 22 of opening bar 3.

[0006] The holding pin 33 as shown on FIGURE 5 is constructed of strong material to be riveted or screwed. The size 34 of pin 33 is slightly smaller than the holes of 12, 21 and 32 in order to the corresponding parts combined and worked properly. The head 35 of the holding pin 33 is slightly larger than the holes of 12, 21 and 32 to sustain the holding pin 33 at the leg 11 of ring post 2.

[0007] The opening bar 3, retaining spring 31 and holding pin 33 are assembled to ring post 2 as show on FIGURE 6. These parts are aligned through the holes 21, 12 and 32 of respective parts at a leg 11 of ring post 2 and enable the opening bar 3 bridged to the other leg 13 of corresponding ring post 2.

[0008] While the principles of the invention have been described above in connection with specific apparatus and applications, it is to be understood that this description is made only by way of example and not as a limitation on the scope of the invention.